

PATENT

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**ABSTRACT OF THE DISCLOSURE**

The present invention refers to a field emitter beam source (10) comprising at least one emitter (11); at least one extracting electrode (19) to extract a beam current ( $I_E$ ) from the emitter (11); a current source (12) for providing a predetermined beam current ( $I_{E0}$ ); a first voltage source (13) for providing a first voltage ( $U_A$ ) between the emitter (11) and the extracting electrode (19) to switch on the beam current ( $I_E$ ); and a first switch ( $S_1$ ) for disconnecting the first voltage source (13). With such a field emitter beam source, the emitter voltage ( $U_E$ ) necessary to emit a predetermined beam current ( $I_{E0}$ ) can be determined. This in turn enables the field emitter beam source (10) to generate beam current pulses with a fast rise time and a well defined beam current pulse charge  $Q$ .